LOGSHEET FOR FIELD CHANGES TO CONTROLLED DOCUMENTS[1]

Change Number	Date	Document Number	Document Title	Section/Page Modified	Description Of Change(s)	Responsible Manager Approval	RSH&Q Approval	Radiological Engineering Approval	Quality Assurance Approval	Completion Of ADM 2.01 Checklist	Completion Of SES/USQD Checklist
1	5/7/98	RF/RMRS-98-205	T1 ALARA JOB REVIEW	AP 5,6,9,11	CLARIFICATIONS & ADD EPDs; NEW CONTROL LIMITS ON DRUM EXPOSURE; "BURRITO" SPECS		NA		SL FOR GD		
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[1] Affixed signatures indicate that Operations Review Committee (ORC) and/or Independent Safety Reviews are NOT applicable because Scope and Fundamental Technical Specifications were NOT changed. Also, related documents affected by the change(s) were modified accordingly.

ADMIN RECORD

BZ-1108-A-00044

2.4 Tasks

Major activities that will be performed as part of the T-1 Project that are relevant to this ALARA Job Review are, excavation, staging/segregation of contaminated materials and soil and inerting the depleted uranium.

2.4.1 Excavation

Conventional excavation techniques will be used to remove the soil, drums, debris, and contaminated soils at the T-1 site. Excavation equipment will consist of a track-mounted excavator, backhoe, and/or front-end loader. The excavator bucket will be equipped with brass, bronze, or equivalent teeth to minimize spark-potential while handling drums containing depleted uranium.

Drums will be removed from the excavation one-at-a-time in order to minimize exposure to workers, the public, and the environment. Standard fire prevention and suppression techniques for pyrophoric metals will be utilized. Extinguishing agents for the potentially pyrophoric depleted uranium chips will be located immediately adjacent to the excavation site and ready for use by trained personnel. Activities associated with excavation of T-1 include:

- Breaching intact drums in trench to relieve any pressure buildup
- Removal of soil, drums, and debris from trench,
- Screening soil for radiological activity and potential VOCs
- Segregating/stockpiling soil in preparation for packaging for offsite shipment or eventual backfill use
- Transporting drums to drum handling area for evaluation and segregation of drum contents
- Removing any contaminated soils and performing verification sampling.

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Excavation of T-1 will be by rows across the width of the trench. A single row is expected to contain between 10 and 12 drums (5-6 drums across stacked two high). Because of the pyrophoric nature of depleted uranium chips, the number of drums that will be simultaneously uncovered and exposed will be minimized. The drums will be exposed one row at a time. To limit the amount of depleted uranium that can be exposed, control limits have been developed. No more than twelve drums, or drum equivalents if drums are not intact, may be exposed at one time in the trench and immediately adjacent to the trench in the Segregation/Packaging area. No more than six drums, or drum equivalents if drums are not intact, may be exposed at one time at the Sampling and Inerting Pad

2.4.2 Staging/Segregation/Disposition of Contaminated Materials and Soil

Drums containing waste materials (paper, wood, PPE, crushed drums or drum fragments, metal, rubber, plastic, etc.) will be evaluated and segregated accordingly. Liquids and sludge, if encountered, will be screened for radiological and VOC contamination and re-packaged if required. After container integrity is assured, the liquids will be stored within secondary containment until appropriately dispositioned. Uranium chips/turnings, debris containing uranium chips and uranium chips in a soil matrix will be transported to the sampling and inerting pad (SIP).

Radiologically contaminated soil above RFCA Tier I action levels, not intimately associated with the depleted uranium waste, will be excavated, treated for VOCs if necessary, and staged for disposal.

Materials that cannot be immediately identified will be repackaged, and sampled to identify the contents. Once the material is identified, it will be disposed of properly. Soils likely to be below RFCA Tier I action levels will be temporarily stored in a soil stockpile (SS). Activities associated with staging/segregation of excavated material include:

- Receipt of drums and other wastes to be segregated,
- Determining if drums are holding waste (liquids, solids, sludge),
- Removing contents from drums for disposition (using manual and automated techniques),
- Transferring liquids and sludge to appropriate containers, sampling, and managing for appropriate disposal,
- Transferring depleted uranium chips/turnings to the sampling and inerting pad area, and
- Managing remaining solids for appropriate disposal.

Radiologically contaminated soils in excess of Tier II values (but below Tier I) will be returned to the excavation within a retrievable wrapper ("burrito").

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2.4.3 Inerting of Depleted Uranium Chips/Turnings

The inerting of depleted uranium chips/turnings has been subcontracted to the Starmet Corporation. Department of Transportation (DOT) accepted methods will be utilized to inert metal uranium chips/turnings and incidental radioactivity contaminated soils in preparation for offsite shipment.

If excavated depleted uranium drums have sufficient structural integrity, they will be loaded into 85-gallon DOT Type 7A specification overpack containers appropriate for pyrophoric Class 7 (radioactive) materials and inerted by covering with mineral oil. Any lathe coolant that is present will be pumped from intact drums prior to adding mineral oil. The over pack drum will then be sealed. Inerting the depleted uranium by adding mineral oil isolates the uranium from oxygen and moisture, rendering it stable and non-pyrophoric. If depleted uranium chips are commingled within a soil matrix, the material will be containerized in Type 7A large metal boxes. Additional dry soil will be added as required to the top of the container to exclude all oxygen that might potentially react with any metallic uranium in the soil. The soil serves three functions (1) it serves as a dispersant to reduce the average concentration of potentially pyrophoric material to levels that would not sustain a reaction, (2) it excludes air by occupying all of the space in the box, and (3) it functions as a heat transfer medium to insure that heat from any localized region of slow oxidation is dissipated.

After inerting and packaging the depleted uranium material, the Type 7A specification containers (85-gallon drums or large metal boxes) will then be temporarily stored at the packaged material staging area prior to loading the material for transport. This shipping concept is compliant with DOT 49 CFR Part 173.418 for pyrophoric Class 7 radioactive materials.

4.0 OPTIONS CONSIDERED

The options of Article 312.4 of the RFETS Radiological Control Manual and Section 17 of the ALARA Program Plan 94-ALARA PLAN-0003, have been evaluated in relation to the safe performance of this work and the following applicable options have been considered:

1. Use of engineering and administrative controls to minimize the spread of contamination and generation of airborne radioactivity.

2. Specification of special radiological training and monitoring requirements.

3. Staging and preparation of necessary materials and special tools.

4. Provisions for waste minimization and disposal.

5. Limiting environmental conditions that would curtail work activities.

6. Review of abnormal and emergency procedures and plans.

7. Personnel dosimetry and protective equipment requirements.

8. Appropriate radiological control hold points and work practice assessment.

9. Walk-down and dry-run of processes using applicable procedures.

5.0 CONTROLS TO BE IMPLEMENTED

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Following the completion of the ACE, which included representatives from each work group associated with the Trench 1 Excavation Project, the following actions have been identified which will establish radiological controls in a manner that does not escalate the inherent hazards associated with this Project.

The details of the overall scheme for contamination control are specified in the project Health and Safety Plan (HASP).

1. Use of engineering and administrative controls to minimize the spread of contamination and generation of airborne radioactivity.

   Contamination / Airborne Radioactivity Control Techniques:

   Excavation, segregation, and inerting activities will be conducted within a temporary structure shielding the work site from the elements, specifically wind and precipitation, thereby minimizing the potential for the spread of contamination outside of the work site.

   Designated routes will be established to accommodate the transfer of excavated materials from the trench to the SIP and to the soil stockpile. These routes will be marked in a manner that distinguishes the areas from the surrounding areas enclosed within the tent. These transport routes will be surveyed for contamination on a routine basis and decontaminated as warranted.

4. Provisions for waste minimization and disposal.

   A Waste Management Plan is described in Section 9.0, Waste Management, of the FFIP.

   The subcontractor will determine the feasibility of recycling DU. Recycling will occur at the subcontractor's off-site facility.

5. Limiting environmental conditions that would curtail work activities.

   In an effort to minimize downtime due to adverse weather conditions, Project Management opted to perform the excavation, sampling and inerting and soil stockpiling within a single weather structure encompassing the work site. Environmental conditions that would curtail work would be those conditions that exceed the manufacturer's specifications for the structure and/or RFETS limitations for work inside temporary structures, as applicable.

6. Review of abnormal and emergency procedures and plans.

   Actions required in abnormal and emergency conditions are to be covered with involved personnel during pre-evolutionary briefings.

   Project specific spill response actions have been developed. Personnel involved with work inside the tent will be trained on these actions. Visitors to the tent will be briefed on these response actions prior to entry.

7. Personnel dosimetry and protective equipment requirements.

   Dosimetry Requirements:

   Whole body dosimetry will be required for all individuals entering the Trench-1 Tent.

   Extremity monitoring will be required for all individuals handling debris and drums. Wrist dosimeters and/or finger dosimeters will be worn beneath the gloves and positioned so that the dosimeter window is directed in toward the palm. If radiological data indicates contact dose rates result in an insignificant dose to the extremities, Radiological Engineering will reevaluate the need for extremity monitoring. Electronic Personal Dosimeters (EPD) shall be used to indicate any sudden change in external dose rates to personnel working in close proximity to the trench excavation (e.g., the "Spotter"), the Segregation/Packaging Area, and the Sampling and Inerting Pad. One individual in each location of concern shall wear an EPD as an indicator of changing conditions for all persons working in that location. The EPDs shall be programmed to alarm if deep-dose-rate measurements equal, or exceed, 2 mrem/h. The EPDs shall be issued in accordance with the requirements of 3-PRO-192-RSP-05.02; "Personnel Dosimetry." Controls to limit skin, extremity and lens of the eye dose are detailed below.

   Skin, Extremity and Lens of the Eye Dose Reduction Methods:

   ANSI approved safety glasses will be worn by individuals not wearing full-face respiratory protection to limit the beta dose to the lens of the eye and protect against industrial hazards.

   Lead loaded (30 mil equivalent Pb) gloves and leather work gloves will reduce skin dose by a factor of 12 [Reference 3, Section 7.43]. Remote handling of debris and turnings will provide a significant dose reduction.

   Contamination build-up inside reusable work gloves (leather) can lead to an unacceptable hand dose. Leather gloves that are to be reused will be routinely monitored, inside and out, for contamination build-up and will be disposed of when contamination levels exceed RCM Table 2-2 values for uranium (i.e., 1,000 dpm/100 cm^2 removable alpha).

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